

Derivative Rules

① $\frac{d}{dx} [cu]$

② $\frac{d}{dx} [u \pm v]$

③ $\frac{d}{dx} [uv]$

④ $\frac{d}{dx} \left[\frac{u}{v} \right]$

⑤ $\frac{d}{dx} [c] =$

⑥ $\frac{d}{dx} [u^n]$

⑦ $\frac{d}{dx} [x]$

⑧ $\frac{d}{dx} [\ln u]$

⑨ $\frac{d}{dx} [e^u]$

⑩ $\frac{d}{dx} [\log_a u]$

⑪ $\frac{d}{dx} [a^u]$

⑫ $\frac{d}{dx} [\sin u]$

⑬ $\frac{d}{dx} [\cos u]$

⑭ $\frac{d}{dx} [\tan u]$

⑮ $\frac{d}{dx} [\cot u]$

⑯ $\frac{d}{dx} [\sec u]$

⑰ $\frac{d}{dx} [\csc u]$

⑱ $\frac{d}{dx} [\arcsin u]$

⑲ $\frac{d}{dx} [\arccos u]$

⑳ $\frac{d}{dx} [\arctan u]$

㉑ $\frac{d}{dx} [\operatorname{arccot} u]$

㉒ $\frac{d}{dx} [\operatorname{arcsec} u]$

㉓ $\frac{d}{dx} [\operatorname{arccsc} u]$

㉔ $\frac{d}{dx} [|u|]$

(50)

if $av(f)$ on $[a, b]$ is 10

(C)

$$\text{Then } \int_a^b f(x) dx = f(b) - f(a)$$

$$av(f) = \frac{1}{b-a} \int_a^b f(x) dx = 10$$

$$\int_a^b f(x) dx = 10b - 10a$$

47. Multiple Choice If $\int_3^7 f(x) dx = 5$ and $\int_3^7 g(x) dx = 3$, then all of the following must be true *except* **A**

(A) $\int_3^7 f(x)g(x)dx = 15$? ✗

(B) $\int_3^7 [f(x) + g(x)]dx = 8$ ✓

(C) $\int_3^7 2f(x) dx = 10$ ✓

(D) $\int_3^7 [f(x) - g(x)]dx = 2$ ✓

(E) $\int_7^3 [g(x) - f(x)]dx = 2$ ✓

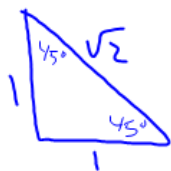
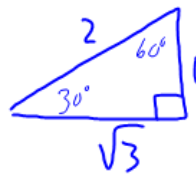
No Calculator

$$(a) \int_0^1 \frac{2x}{1+x^4} dx = \frac{\pi}{4}$$

$$(b) \int_2^4 \frac{6x^2}{\ln(2)2x^3} dx = 3$$

$$(c) \int_{-\frac{\pi}{3}}^{\frac{\pi}{6}} -3\cos(3x) dx = -1$$

$$(d) \int_{-3}^4 \frac{x^2-1}{x+1} dx = \frac{-7}{2} \quad (e) \int_0^{\frac{\sqrt{\pi}}{2}} -2x \sin(x^2) dx = \frac{\sqrt{2}}{2} - 1$$



$$\int_{-3}^4 \frac{(x-1)(x+1)}{(x+1)} dx = \int_{-3}^4 (x-1) dx$$

Sect. 5.4

#27-36

[Hw] Read 5.4

$$\int x^2 dx \rightarrow \frac{x^3}{3} + C$$

$$\int x^5 dx = \frac{x^6}{6} + C$$